

## Structural control of sol-gel processed metal oxide and organic monoliths by self-assembly of magnetic colloidal particles

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The structural control of porous materials is an important field of research, because it allows the preparation of materials with exceptional properties. One way to induce structural control, is to use the self-assembly properties of superparamagnetic nanoparticles. In this work, a system using superparamagnetic magnetite nanoparticles and a uniform magnetic field was used during the synthesis of resorcinol-formaldehyde and titanium oxide monoliths to induce a chain-like structure. The template system interacted well with the sol-gel synthesis of the organic monoliths producing monolith with a chain like structure. In the case of titanium oxide monolith, different strategies to adapt the system to the synthesis were used, but the structural control could not be achieved. However, acid-resistant templates have been synthesized to broaden the spectrum of possible synthetic processes for successful structural control of the titanium oxide monolith.

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